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REMARKS

Claim 1 through 39 have been canceled. Claims 40 through 47 have been added.

Objection to the Drawings

The Office Action objected to the drawings because reference sign 110 in Figure 1 was not mentioned in the description. In the above amendment of the specification, the reference sign has been inserted into the description of the specification. This insertion adds no new matter since the description of the reference 110 was already in the specification. Thus, it is requested that the objection to the drawings be removed.

Objection to the Specification

The Office Action objected to the specification due to informalities. These informalities have been corrected in the above amendment to the specification, and it is requested that the objection to the specification be removed.

Rejection of the Claims under 35 U.S.C. Section 103

The Office Action rejected the previous independent claims under 35 U.S.C. Section 103 over various references. However, the newly added claims are new and non-obvious over these references, either alone or in combination. Each of these references is discussed below.

Independent Claim 40 and Dependent Claims 41 through 45

U.S. Patent No. 5,815,490 to Lu

The Lu reference fails to disclose the requirement of claim 40 of, "in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network." The Lu reference merely discloses an SDH ring network that performs layer 1 switching, either line switched or path switched. As stated at column 2, lines 51 through 57, "A line switched architecture uses SDH line layer

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indications to trigger the protection switching action. Switching action is performed at only the line layer to recover from failures." Or as stated at column 2, line 62 through column 3, line 4, "A path switched ring include two counter-rotating fibers, each of which forms a two-way communication path. The duality of complete two-way paths is used to protect each other at any given time . . . At this node one of the two signals is selected as working." The Lu reference nowhere discloses relabeling IP packets using a label switched protection path in response to failure indications in the SDH overhead.

U.S. Patent 5,572,515 to Williamson et al

The Williamson reference fails to disclose the requirements of claim 40 of, "in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network." The Williamson reference only discloses detection of a layer 1, physical layer, LOS signal in a SONET/SDH signal. As stated at column 2, lines 56 through 64, "The physical layer receivers 52,54 detect Loss of Signal (LOS) . . . That is, when there are no transitions on the incoming signal)before descrambling for 2.3 to 100 microseconds, the receivers provide LOS signals 56 and 58." Thus, the Williamson reference only discloses receivers for generating layer 1 LOS signals in SONET/SDH overhead. There is no discussion of a protection path switching unit for determining packets that are to be transmitted on working paths affected by a failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network.

Furthermore, there is no discussion in the Williamson reference of the requirements of claim 41 of "a network condition unit for generating an overhead failure signal to all nodes in the fiber optic ring network in response to a failure condition in an adjacent link or congested traffic conditions on an adjacent link, wherein the overhead failure signal includes information on type of problem and link location." The Office action states that the Williamson reference discloses a system in which failures occurring on multiple OSI layers can be detected. However, as quoted above, the Williamson reference only discloses receivers that generate a LOS signal based on physical layer, layer 1 incoming signal. There is no discussion of generating a LOS signal or other overhead signal due to traffic congestion or other layer 2 or 3 conditions.

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U.S. Patent No. 6,359,860 to Ando

The Ando reference fails to disclose the requirement of claim 40 of, "in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network." The Ando reference merely discloses a circuit switched node that switches the connection state of a switch on the basis of a failure. As stated at column 2, lines 20 through 23, "The nodes N1 and N5 comprise a cross-connection apparatus for switching signals in changing connection to a spare line upon occurrence of a fault ...". There is no discussion of packets or label switched paths or relabeling packets for transmission on a label switched protection path in a fiber optic ring network.

U.S. Patent No. 6,292,464 to Elahmadi et al.

The Elahmadi reference fails to disclose the requirement of claim 40 of, "in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network." The Elahmadi reference discloses optical cross connect switches that provide protection circuit switching of a wavelength in response to a failure. At column 3, lines 22 through 26, "Upon detection of the fault, the transmission of wavelength λ_1 is automatically re-routed along alternate routes 235, 236 based on pre-determined routing information stored in look-up tables 214, 216 associated with each switch." The Elahmadi reference discusses its method at column 3, lines 58 through 63 with reference to Figure 3, "In step 330, forward signals of a given wavelength are transmitted from Node1 210 to OCCS 238 where it is switched internally to an appropriate output port. In step 340 the signal is transmitted through alternate fiber optic cable 236. In step 350, the signal is then routed inside OCCS 240 for transmission to Node2 212." Thus, only a specific wavelength is rerouted based on a stored look-up table. There is no discussion of relabeling packets to a

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label switched protection path in response to receiving a failure indication on the overhead of a synchronous optical signal in the fiber optic ring network.

Furthermore, the Elahmadi reference fails to disclose the requirements of claim 41 of "a network condition unit for generating an overhead failure signal to all nodes in the fiber optic ring network in response to a failure condition in an adjacent link or congested traffic conditions on an adjacent link, wherein the overhead failure signal includes information on type of problem and link location." The Elahmadi reference reference only describes a layer 1 fault condition. As stated at column 3, lines 19 through 22 of the Elahmadi reference, "A fault condition such as a break in the primary fiber optic cable 244 is detected at the optical switches 238,240 when the previously transmitted signals are no longer received at either switch 238, 240." There is no discussion of layer 2 or layer 3 factors, such as traffic congestion, triggering a fault condition.

U.S. Patent No. 6,032,190 to Bremer et al.

The Bremer reference fails to disclose the requirement of claim 40 of, "in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network." The Bremer reference describes processing data packets by "reducing the amount of time associated with retrieving header information from a memory and associated with a route table look-up," as stated at column 2, lines 30 through 35. Nowhere does the Bremer reference describe a synchronous optical network or receiving a failure indication on the overhead of a synchronous optical signal in the fiber optic ring network or even any type of protection switching by relabeling packets for transmission on a label switched protection path in response to a failure indication.

U.S. Patent No. 6,295,296 to Tappan

The Tappan reference fails to disclose the requirement of claim 40 of, "in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label

switched protection path in the fiber optic ring network." The Tappan reference merely discloses a label switching method during normal operation with no failures. There is no disclosure of a fiber optic network or synchronous optical network signals or receiving a failure indication on the overhead of a synchronous optical signal in the fiber optic ring network or even any type of protection switching by relabeling packets for transmission on a label switched protection path in response to a failure indication.

U.S. Patent No. 6,324,175 to Shiimoto et al.

The Shiimoto reference fails to disclose the requirement of claim 40 of, "in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network." The Shiimoto reference discloses an SDH data network that determines routing of IP packets by signaling over a separate SS7 network. It states at column 6, lines 25 through 34, "Control circuit 33 transfers the IP address of the arrived burst data to another local switch by way of the signaling system No. 7 network. The control circuit of the local switch which receives this IP address refers to IP address database DB in its local switch, and if that IP address is an IP address managed by that local switch, it sends the time-slot-relay, i.e., the routing information, which has been allocated to itself, in reply to the local switch which transmitted the IP address the reply being sent via the signaling system No. 7 network." At column 7, lines 12 through 16, the Shiimoto reference states that, "When a local switch receives an IP packet from a terminal which it serves, it adds to the header the E.164 address corresponding to the IP address in the header of that IP packet, and transfers the resulting packet to the STM network in time slots corresponding to this address." The Shiimoto reference nowhere discloses a failure condition or receiving a failure indication on the overhead of a synchronous optical signal in the fiber optic ring network or even any type of protection switching by relabeling packets for transmission on a label switched protection path in response to a failure indication.

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U.S. Patent No. 6,263,443 to Anderson et al.

The Anderson reference fails to disclose the requirements of claim 40 of, "in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network." The Anderson reference merely discloses a method of scrambling an IP packet for transmission over a SONET network to ensure that a pattern of a user's data does not match the transmission scrambling pattern, as stated at column 2, lines 27 through 36. The Anderson reference nowhere discloses label switching or a failure condition or receiving a failure indication on the overhead of a synchronous optical signal in the fiber optic ring network or even any type of protection switching by relabeling packets for transmission on a label switched protection path in response to a failure indication.

No Suggestion in the Combination of References

Each of the above references fails to disclose the requirements of claim 40 of, "in response to receiving the failure indication on the overhead of a synchronous optical signal in the fiber optic ring network, a protection path switching unit for determining packets that are to be transmitted on working paths affected by the failure and relabeling the packets for transmission on a label switched protection path in the fiber optic ring network." Furthermore, there is no suggestion in the references to modify them to reach the requirement of the claims. The present invention allows SONET/SDH overhead signaling to affect layer 3 label switching of IP packets. Furthermore, layer 3 considerations, such as traffic congestion can trigger a fault indication on SONET/SDH overhead signaling. Such interactions between layer 1,2 and 3 protocols is not suggested or disclosed in any of the references.

Independent Claim 46

For similar reasons stated above, the references fail to disclose the requirements of claim 46 of, "labeling packets that were to be transmitted over the failed link to the assigned label switched protection path in response to the failure indication in the overhead bytes of the synchronous optical network."

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Conclusion

For the above reasons, the foregoing amendment places the Application in condition for allowance. Therefore, it is respectfully requested that the rejection of the claims be withdrawn and full allowance granted. Should the Examiner have any further comments or suggestions, please contact Jessica Smith at (972) 477-9109.

Respectfully submitted,

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Dated: March 10, 2003

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